IS 10217 (1982): Method of determination of crushability index [MED 17: Chemical Engineering Plants and Related Equipment]

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UDC : 620·163·4

IS : 10217-1982

( Reaffirmed 2006 )

*Indian Standard*

# METHOD OF DETERMINATION OF CRUSHABILITY INDEX

**1. Scope** — Covers the method of determination of crushability index for size reduction by crushing.

**2. Definition**

**2.1** *Crushability Index/Crushing Strength* — It is a measure of resistance of a material to crushing when compressive load is applied to two parallel faces of the material. The absolute crushing index cannot be measured either by direct or indirect measurement.

**3. Applicability** — In a large number of size reduction units the material is crushed between two surfaces by compression. In such cases the strength of the material under compression is an important criterion.

**4. Test Method**

**4.1** *Details of Equipment*

**4.1.1** Drilling machine for cutting cylindrical cores diamond tip drill bit of size 20 mm.

**4.1.2** Cutting machine to cut cylindrical pieces from the cylindrical cores.

**4.1.3** Polishing machine to polish the flat surfaces of the cores.

**4.1.4** Universal testing machine to determine the crushing strength of the sample.

**4.2** *Procedure* — Select a piece of the sample of size 10 × 10 cm with one side roughly flat to be kept on the drilling machine. Cut a cylindrical core with water cooled drill bits. The drill bits shall work perfectly vertical otherwise there is chance of breaking the drill bit. Cut piece of cylindrical samples with both sides parallel of size just larger than the diameter 20 mm. Polish the two surfaces in a polishing machine or by hand so that :

a) length equals diameter,

b) the two flat sides are parallel, and

c) the two flat sides are at right angles to the sides of the cylinder.

Put the sample on a universal testing machine on the flat surface and determine the crushing strength. Express the crushing strength in kg/ $cm^2$.

## EXPLANATORY NOTE

The crushing index of the material vary from point to point and a large number of samples has to be tested. Samples having cracks or obvious weakness shall be discarded. The maximum value shall be used in any design calculation.

The piece of the sample shall be free from surface moisture, being dried at 105°C, prior to determination of its crushing strength, on the universal testing machine.

Adopted 22 July 1982



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Chemical Engineering Sectional Committee, EDC 57; Crushing and Grinding Equipment Subcommittee, EDC 57 : 4 [ Ref : Doc : EDC 57( 3530 ) ]

Printed at Printrade, New Delhi, India